

A High Reliability Frequency Stabilized Semiconductor Laser Source, Phase II

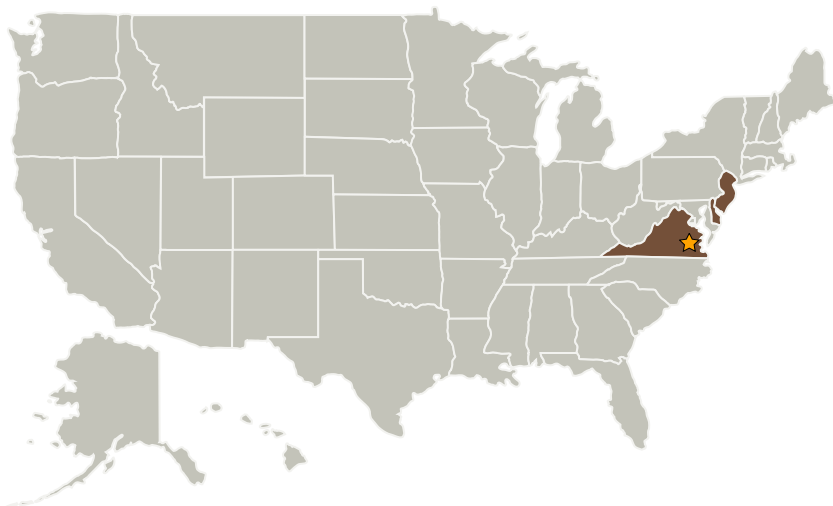
Completed Technology Project (2009 - 2012)



Project Introduction

Ultrastable, narrow linewidth, high reliability MOPA sources are needed for high performance LIDARs in NASA for, wind speed measurement, surface topography and earth and planetary atmosphere composition measurements. Princeton Optronics is developing a MOPA laser source for these applications. Phase I experiments concluded that the optimum approach will use a DPSS microchip laser with the SOA. This would provide a MOPA source with narrow linewidth, <10kHz, and an output power of 1W. The Phase II program would develop the MOPA laser technology and build prototypes for testing in NASA. These prototypes would be ready for final engineering test and manufacture. The microchip laser will be upgraded to incorporate our patented noise reduction technology to suppress RIN. This reduces noise >55dB in our Telecom tunable lasers. This would provide a seed laser with 1kHz linewidth, low RIN and >10mW power. The SOA designed in Phase I would be developed for 1W output power in the 1550nm band. Filtering will be incorporated to minimize noise and linewidth broadening. Bench experiments will be performed to determine optical configuration for the final rugged package design. Packaged prototypes will be built and tested. Final prototypes will be built and available to NASA laboratory for testing.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Princeton Optronics, Inc.	Supporting Organization	Industry	Mercerville, New Jersey

Primary U.S. Work Locations	
Delaware	New Jersey
Virginia	

Project Transitions

 **December 2009:** Project Start **June 2012:** Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.5 Lasers